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Title of Invention: COMMUNICATION MANAGEMENT SYSTEM FOR COMPUTER NETWORK-BASED TELEPHONES

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- (c) if said data packet is said computer network-based telephone session packet, filtering at least data in said data packet to determine if said data includes computer network-based telephone session data;
- (d) if said data includes computer network-based telephone session data, analyzing said computer network-based telephone session data; and
- (e) storing said computer network-based telephone session packet to form a stored packet according to said type, such that said stored data packet forms at least a portion of the computer network-based telephone session.
11. The method of claim 10, wherein said data packet has a header and the step of analyzing said data packet in step (d) further comprises the step of:
- (i) filtering said header of said data packet to retrieve header data related to the computer network-based telephone session.
12. The method of claim 11, wherein substep (i) of step (d) further comprises the step of:
- (1) analyzing said header data to determine if said data packet is an IP packet.
13. The method of claim 12, wherein the step of analyzing said header data in substep (1) further comprises the steps of:
- (i) examining said header of said IP packet to determine an IP address of said packet source;
- (ii) determining if said IP address is a recorded IP address;
- (iii) passing said IP packet to form a passed IP packet substantially only if said IP address is said recorded IP address; and
- (iv) alternatively, dumping said IP packet.
14. The method of claim 13, wherein the step of determining if said IP address is said recorded IP address is performed by comparing said IP address to a list of IP addresses from packet sources, such that if said IP address is included in said list, said IP address is said recorded IP address.
15. The method of claim 13, wherein step (d) further comprises the steps of:
- (ii) analyzing said IP packet to determine whether said passed IP packet is an H.225 packet, a H.245 packet, an RTP packet or an RTCP packet;
- (iii) if said type of said passed IP packet is said H.225 packet, determining whether said H.225 packet is a setup packet or a connect packet;
- (iv) if said H.225 packet is said setup packet, setting a status flag as "start session request";
- (v) alternatively, if said H.225 packet is said connect packet and said status flag is "start session request", storing at least one detail of the computer network-based telephone session; and
- (vi) setting said status flag as "wait for logic channel".
16. The method of claim 15, wherein step (d) further comprises the steps of:
- (vii) alternatively, if said type of said passed IP packet is said H.245 packet, determining whether H.245 packet is an open logical channel request packet, an open

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- logical channel acknowledgment packet or a terminal capability set packet;
- (viii) if said H.245 packet is said open logical channel request packet and said status flag is "wait for logic channel", setting said status flag as "wait for acknowledgment";
- (xi) alternatively, if said H.245 packet is said open logical channel acknowledgment packet and said status flag is "wait for acknowledgment", performing the steps of:
- (A) setting said status flag as "wait for terminal capability"; and
- (B) saving a transport address of the destination of the communication session; and
- (xii) also alternatively, if said H.245 packet is said terminal capability set packet, performing the steps of:
- (A) storing a capability of the packet destination from said terminal capability packet; and
- (B) setting said status flag as "in call progress".
17. The method of claim 16, wherein if said status flag is "in call process" and said type of said passed IP packet is said RTP packet, storing said RTP packet.
18. The method of claim 16, wherein if said status flag is "in call process" and said type of said passed IP packet is said RTCP packet, storing said RTCP packet.
19. The method of claim 10, further comprising the steps of:
- (f) retrieving said stored data packet to form a retrieved data packet; and
- (g) reconstructing at least a portion of the computer network-based telephone session according to said retrieved data packet.
20. The method of claim 19, wherein the step of retrieving said data packet of step (f) includes the steps of:
- (i) retrieving a source IP address of the packet source, a start time of the network-based telephone session, and an end time of the computer network-based telephone session; and
- (ii) selecting at least one computer network-based telephone session according to said source IP address, said start time and said end time.
21. The method of claim 19, wherein the step of reconstructing at least a portion of the computer network-based telephone session of step (g) includes displaying audio data.
22. The method of claim 19, wherein the step of reconstructing at least a portion of the computer network-based telephone session of step (g) includes displaying video data.
23. The method of claim 19, wherein the step of reconstructing at least a portion of the computer network-based telephone session of step (g) further comprises the steps of:
- (i) receiving substantially only RTP packets;
- (ii) examining a header of said RTP packets to determine a time stamp for each of said RTP packets; and
- (iii) displaying said RTP packets in order according to said time stamp.

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RAS Signaling Channel is opened between the endpoint and the Gatekeeper. The RAS Signaling Channel is opened prior to the establishment of any other channels between H.323 endpoints.

FIG. 7 shows a second embodiment of the system of the present invention as a zone configuration system 116. A zone 118 is the collection of all terminals (Tx) 108, gateways (GW) 110, and Multipoint Control Units (MCU) 112 managed by a single gatekeeper (GK) 114. Zone 118 includes at least one terminal 108, but does not necessarily include one or more gateways 110 or MCUs 112. Zone 118 has only one gatekeeper 114 as shown. However, in the preferred embodiment shown, zone 118 is preferably independent of LAN topology and preferably includes multiple LAN segments 120 which are connected using routers (R) 122 as shown or other similar devices.

Each monitored LAN segment 120 has a local communication management unit 124 according to the present invention, of which two are shown. A central management unit 126 according to the present invention controls all local communication management units 124. In addition to centralized database and control services, central management unit 126 can be used for the real-time monitoring and off-line restoration of audio and/or video communication sessions from a single point. Central management unit 126 is optionally and preferably either a dedicated unit similar in structure to local communication management units 124 but without the storage capability, or central management unit 126 is alternatively and preferably integrated with local communication management units 124 to provide the functionality of both local communication management unit 124 and central management unit 126 in a single station. Local communication management units 124 are preferably either communication management units 13 substantially as described in FIGS. 1 and 2, or alternatively and preferably are simpler units which lack the capability to retrieve and display a communication session locally.

In still another preferred embodiment of the present invention (not shown), multi-user operation based on Client/Server architecture is preferably supported for basic system 104 and zone system 116. An unlimited number of "Client" stations may be connected anywhere on the LAN, providing users with management and monitoring/retrieval capabilities determined by the authorization level of each specific user.

It will be appreciated that the above descriptions are intended only to serve as examples, and that many other embodiments are possible within the spirit and the scope of the present invention.

What is claimed is:

1. A system for managing a computer network-based telephone session over a computer network, the computer network being divided into a plurality of segments, the system comprising:

- (a) a network connector for connecting to the computer network and for receiving data packets from a single segment of the computer network;
- (b) a filtering unit for filtering said data packets from said single segment and for accepting said data packets substantially only if said data packets contain data selected from the group consisting of audio data and video data, such that said data packets form at least a part of the computer network-based telephone session and such that said data packets are selected data packets;
- (c) a management unit for receiving said selected data packets from said single segment and for storing said selected data packets, such that said selected data

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packets are stored data packets, wherein said management unit and said filtering unit form a local management unit for said single segment of the computer network, said local management unit analyzing said selected data packets if the computer network-based telephone session occurs within said single segment;

- (d) a storage medium for receiving and storing said stored data packets from said local management unit, such that at least a portion of the computer network-based telephone session is stored; and
- (e) a central management unit for controlling each local management unit, said central management unit controlling storage in said storage medium and said central management unit analyzing said selected data packets from the computer network-based telephone session if the computer network-based telephone session includes data packets transmitted on a plurality of segments of the computer network.

2. The system of claim 1, further comprising:

- (f) a data restore unit for retrieving and displaying said at least a portion of the computer network-based telephone session, said data restore unit requesting said data packets from said storage medium through said central management unit, and said data restore unit reconstructing said data packets for displaying said at least a portion of the computer network-based telephone session.

3. The system of claim 2, wherein said data restore unit further comprises a communication session display unit for displaying at least a portion of the computer network-based telephone session.

4. The system of claim 3, wherein said communication session display unit is selected from the group consisting of a video unit and an audio unit.

5. The system of claim 2, further comprising:

- (g) a database connected to said filtering unit for storing filtering information, said filtering information including at least one IP address of a party whose computer network-based telephone sessions are monitored; wherein said filtering unit accepts said data packets according to said filtering information, such that said filtering unit substantially only accepts said data packets if said data packets fulfill said filtering information.

6. The system of claim 5, further comprising:

- (g) a user computer for receiving at least one command of a user and for displaying information to said user, such that said user determines said filtering information according to said at least one command of said user.

7. The system of claim 6, wherein the computer network is selected from the group consisting of a LAN (local area network) and a WAN (wide area network).

8. The system of claim 7, wherein the computer network is a LAN (local area network).

9. The system of claim 1, wherein said network connector is a network interface card.

10. A method for storing at least a portion of a computer network-based telephone session performed on a computer network, the computer network-based telephone session being performed between a packet source and a packet destination, the steps of the method being performed by a data processor, the method comprising the steps of:

- (a) receiving a data packet from the packet source on the computer network;
- (b) analyzing said data packet to determine if said data packet is a computer network-based telephone session packet;